

The Boreal Forest

The boreal forest is the northernmost and largest forest ecosystem in the world. Extreme cold and a short growing season are the main environmental factors that shape this forest. In this region, the boreal forest is composed of stands of white and black spruce, aspen, balsam poplar, birch, alder, and willow. A young forest often has more deciduous trees and shrubs. As the forest matures, spruce trees begin to dominate. Over time, the accumulation of spruce needles on the forest floor creates a thick buildup of organic matter, which decomposes slowly. This thick organic layer, in concert with canopy shade, keeps ground temperatures cool, increasing the depth of the permafrost.

Red squirrel

The red squirrel—the sentinel of the boreal woods— sends scolding alarms throughout the forest, tipping off other animals to intruders.

Diamond willow

Swainson's thrush

Labrador tea

Red squirrel midden

Pine marten

Spruce cone scales form middens as red squirrels discard them and eat the extracted seeds. Squirrels cache winter food deep

bark

Permafrost causes poorly drained soils and restricts the growth of deep root systems. Dense shade, thick organic matter, and cold, moist soil result in low plant diversity and an often stunted-looking forest. Is the forest here old or young? Is the ground spongy with organic debris and mosses?

Spruce broom rust

Kinnikinnick hosts the spruce broom rust fungus. Spores released from the fungus living on kinnikinnick enter the spruce tree, causing branch clustering, which provides habitat for squirrels and birds.

Dark-eved junco

Snowshoe

Highbush cranberry

Kinnikinnick

Yellow-rumped warbler

White spruce

Spruce tree branches shed snow easily; branches bend rather than break. Needles can capture sunlight from any angle and conserve water, important where ice and snow lock water away much of the year.

Boreal chickadee

Permafrost

Permafrost limits the depths of root systems, so boreal tree roots tend to be shallow, obtaining water from surface soil.

oothor moss